

but six and seven stages are not infrequent, while there are eight in Scepis and Apatelodes and nine and ten in Arctians, while the European *Nolacentalis* moults nine times, other species shedding their skins six times (Buckler). (Psyche, v, pages 420-422). *Callosamia promethea* moults but three times as a rule. *Orgyia antiqua* was found by Hellins to moult from three to five times. Riley found that in *O. leucostigma* the males moult four times, the female four but sometimes five times, while Dyar states that in *O. gulosa* the male larvae moult three or four times, the female always four times; while in *O. antiqua* there are six stages, and in the female seven. Lithocolletis, Chambers thinks, as a rule moults eight times, Comstock thinks *L. hamadryadella* casts its skin seven or eight times.

In the blow-fly (Calliphora) Leuckart and Weismann have inferred at least two moults, while Weismann suspects that there are as many as four. In *Musca domestica* we have observed that the larva moults three times; in Oestridae there are three larval stadia (Brauer). In Corethra there are four larval moults, and Miall thinks there are probably as many. In the phytophagous Hymenoptera there are three moults or four larval

stages in *Nematus erichsonii*, but Dyar informs me that less than four stages in saw-fly larvae is very rare, that he has only one record of less than five, and that that is doubtful; five for Nematid, six and seven for others, is certainly the rule. "The highest I have is the indication of eleven stages for *Harpiphorus variannus*" (Can. Ent., xxvii, p. 208). In *Bombus* we have observed five different sizes of larvae and hence suppose the least number of ecdyses is five, while we are disposed to believe that this insect as well as wasps and bees in general shed their skins as many as ten times during their entire existence.

The honey bee, Cheshire thinks, since he has found the red and ruptured pellicles, probably moults six times before it spins its cocoon, or passes into the semipupa condition. (Bees and Bee-Keeping, p. 20).

As to the cause of the great number of moults in the Arctians and the beetles experimented with by Riley, it would seem that cold and the lack of food during hibernation were the agents in Arctians, and starvation or the lack of food in the case of the beetles, such cause preventing growth, though the hypodermis-cells retained their activity.

DIPTERA OF THE ORGAN MOUNTAINS IN SOUTHERN NEW MEXICO. — I.

BY C. H. TYLER TOWNSEND, LAS CRUCES, NEW MEXICO.

In *Science*, for Dec. 8, 1893, the writer gave a general description of the

Organ Mountain range, which lies in the Doña Ana county, some fifteen miles

to the east of the Mesilla Valley of the Rio Grande. Data on the life-zones of these mountains are given in that article, and are revised somewhat in *Transactions Texas Acad. Science*, i, p. 79. A popularly written sketch of a trip to the Organ Mts. is given by Mr. Charles H. Ames in *Appalachia* for 1892. If the reader will take the trouble to look up and familiarize himself with this literature, he will have a fair idea of the more important topographical features of these mountains. While not extensive in area, they constitute a region of much interest from a biologic point of view. Their highest peaks reach to an elevation of 8,500 ft. above the level of the sea.

1. *Eupcodes volucris* OS. One ♀. Dripping Spring, Organ Mts. About 5600 ft. August 10. Length, $8\frac{1}{2}$ mm. Legs reddish, bases of all the femora black, hind femora with but little more black than others, knees narrowly yellowish. Stigma of wings very pale yellowish, as is whole space between auxiliary and first longitudinal veins. Strange to say, there is some scattered pubescence barely visible on lower half of eyes. No pubescence is visible in many other specimens that I have examined.

Also one ♀. Soledad Cañon. About 5000 ft. August 15. On flowers of *Melampodium cinereum* DC. Length, 7.5 mm. Later in the season both ♂s and ♀s were taken in the Sacramento Mts.

It is a remarkable but well-known fact that the sixth segment in the ♂ of this

species is always unsymmetrical, and points to the right. So far as I know, the case is without parallel among the diptera. The asymmetry consists in the left lateral margin being oblique and nearly in a straight line with the left lateral margin of the fourth and fifth segments; while the right lateral margin is evenly rounded in outline. The segment is thereby thrown out of line with the longitudinal axis of the abdomen, and is left pointing to the right.

2. *Zodion splendens* Jaenn. One ♂. Soledad Cañon. About 5000 ft. August 15. On flowers of *Zinnia grandiflora* Nutt. This is a large specimen, measuring 11 mm., and is very pronounced in its markings and coloration. The face and front, except vertex, are unicolorous, both being of the same clear light yellow tinge. The fourth abdominal segment is wholly pollinose, except the pair of oval spots. Scutellum pollinose on whole upper surface.

3. *Zodion fulvifrons* Say var. *abdominale* Say. One ♀. Soledad Cañon. About 5500 ft. August 15. On flowers of *Pectis papposa* Gray (det. Ckll.). Length, nearly 7 mm. Front silvery dusted along orbits, yellow, reddish-yellow at vertex. Thoracic dorsum with a third, or median, more slender brownish stripe. Second abdominal segment nearly all yellow, hind border brownish, and a faint median line pale brownish. Anterior corners with a tuft of black hair. First, third, and fourth segments brownish; sixth and basal half of seventh reddish-yellowish; all

silvery pollinose. Pair of median stripes hardly apparent, and only on third segment. No black on legs or antennae. Otherwise agrees with Williston's description.

The common form of this species in New Mexico, especially in the Mesilla Valley, is the present one—that originally described by Say as *abdominale*. It is characterized in general by the front, median abdominal stripes, and legs being as described above. The thorax has the median brown line less conspicuous, or subobsolete; the abdomen with at least second and sixth segments mostly yellowish; abdomen sometimes wholly yellowish, in which case the median stripes may be moder-

ately distinct but reddish. See section II of paper on Gila Diptera (*Psyche*, 1897), for note on *fulvifrons*, typical form.

4. *Belvosia bifasciata* Fab. One ♀. Dripping Spring, Organ Mts. About 5600 ft. August 10. Not quite the normal type, but near it. Facial ridges ciliate half way up, but not as high as lowest frontal bristles. Third antennal joint about $2\frac{1}{2}$ times as long as second. Third and fourth abdominal segments wholly deep golden, as in the normal form. The claws in ♀ of this genus are always hooked and black on tips. The ♂ has the claws nearly straight, and without black.

LIFE HISTORY OF PYROMORPHA DIMIDIATA H. S.

BY HARRISON G. DYAR, WASHINGTON, D. C.

The larva of *Pyromorpha* has previously eluded detection on account of its peculiar habit. It lives beneath the fallen leaves in oak woods, feeding on the dead and decaying leaves. The larvae are solitary. The period from egg to cocoon is three months, June 15 to Sept. 15. The winter is passed in the cocoon as in the other species of the family. The coloration is dark brown and rather uniform to harmonize with the situation in which the larvae live.

Egg. Elliptical, a little flattened above and below like Geometrid eggs, but more elongate and cylindrical than those. White, moderately shining, soft and thin-skinned. Length 1 mm., height and width .6 mm. Reticulations distinct and regular, much rounded, like a series of contiguous circles.

Stage I. Head rounded, partly retracted, black; width .3 mm. Body thick, slightly

flattened, grayish white. Warts low, a group of hairs from tubercular bases, finely dotted spinulose, a small clear bulb at the base of each. Three warts and leg-plate seen, the larva wart with few hairs. Skin finely spinulose. The primitive first stage is absent.

Stage II. Head retracted in the fold of joint 2, black over the vertices of the lobes, clypeus pale, mouth pointed, brown; width .4 mm. Body sordid gray, in marks. Hairs numerous, from large low warts, stiff, shut. pale with black tips, spinulose with basal bulbs as before. Feet normal. Later a faint whitish subdorsal line is seen against the dark fold within, a narrow brown dorsal line and faint mottlings low down on the sides. Cervical shield brown.

Stage III. Head light brown with large black eye, retracted in joint 2; width .6 mm. Body thick and stout, densely hairy. Cervi-